Audit Report

YEAR 2000 STATUS OF THE AN/ARC-220 NAP-OF-THE-EARTH AIRCRAFT COMMUNICATION SYSTEM

Report No. 99-158 May 14, 1999

Office of the Inspector General
Department of Defense

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Acronyms

AN/ARC-220	AN/ARC-220 Nap-of-the-Earth Aircraft Communication System
JITC	Joint Interoperability Test Command
Y2K	Year 2000

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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ARLINGTON, VIRGINIA 22202

May 14, 1999

MEMORANDUM FOR AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Audit Report on the Year 2000 Status of the AN/ARC-220 Nap-of-the-Earth Aircraft Communication System (Report No. 99-158)

We are providing this report for information and use. Because this report contains no findings or recommendations, no written comments were required, and none were received.

Questions on the audit should be directed to Mr. Jerry Hall at (703) 604-9098 (DSN 664-9098) (jerry@dodig.osd.mil) or Ms. Mary Lu Ugone at (703) 604-9049 (DSN 664-9049) (mlugone@dodig.osd.mil). See Appendix B for the report distribution. The audit team members are listed inside the back cover.

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Office of the Inspector General, DoD

Report No. 99-158 **May 14, 1999**
(Project No. (9AS-0090.02)

Year 2000 Status of the AN/ARC-220 Nap-of-the-Earth Aircraft Communication System

Executive Summary

Introduction. The National Defense Authorization Act for FY 1999 requires the Inspector General, DoD, to selectively audit information technology and national security systems certified as Y2K compliant to evaluate the ability of systems to successfully operate during the actual Y2K, including the ability of the systems to access and transmit information from point of origin to point of termination. This is one in a series of reports addressing that requirement. In addition, this is also one in a larger series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the year 2000 computing challenge. For a listing of audit projects addressing the issue, see the year 2000 webpage on the IGnet at http://www.ignet.gov.

Objectives. The overall audit objective was to evaluate the ability of the AN/ARC-220 Nap-of-the-Earth Aircraft Communications System to operate successfully in the year 2000, including the system's ability to access and transmit information from point of origin to point of termination. Additionally, the audit determined the adequacy of the contingency plan and the accuracy of the status reports.

Results. The audit determined that the program manager properly certified the AN/ARC-220 Nap-of-the-Earth Aircraft Communications System as Y2K compliant and prepared an adequate contingency plan. The result is that the system is low risk and should operate successfully in the year 2000. Additionally, a higher level test for the AN/ARC-220 is not required because the system is not date dependent.

Management Comments. We provided a draft of this report on April 26, 1999. Because this report contains no findings or recommendations, written comments were not required, and none were received. Therefore, we are publishing this report in final form.

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Background

DoD Year 2000 Management Strategy. The Senior Civilian Official, Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), issued the "DoD Year 2000 Management Plan" (DoD Management Plan), version 2.0, in December 1998. The DoD Management Plan provides the overall DoD strategy and guidance for inventorying, prioritizing, fixing, testing, and implementing compliant systems and monitoring their progress. The DoD Management Plan describes what each DoD Component must accomplish in each phase of the required five-phase, year 2000 (Y2K) management process. The target completion date for implementing all mission-critical systems was December 31, 1998.

Army Y2K Action Plan. The Army Y2K Action Plan, Revision 2.0, June 1998, provides guidance to programs on Y2K analysis, verification, certification, and reporting requirements for all mission-critical systems. The Army tracks management activities according to the criteria and timelines used in the Army and DoD Y2K Management Plans.

Congressional Requirement. The National Defense Authorization Act for FY 1999 requires the Inspector General, DoD, to selectively audit information technology and national security systems certified as Y2K compliant to evaluate the ability of systems to successfully operate during the actual Y2K, including the ability of the systems to access and transmit information from point of origin to point of termination.

AN/ARC-220 Nap-of-the-Earth Aircraft Communication System. The AN/ARC-220 Nap-of-the-Earth Aircraft Communication System (AN/ARC-220) is a multifunctional, high frequency radio whose lightweight compact construction, low power consumption, and tuning efficiency make it ideally suited for rotary-wing, tactical airborne applications. The radio provides secure and nonsecure voice and data mission-critical communications, with automatic link establishment and electronic countermeasures. The AN/ARC-220 provides communications among Army aircraft flying nap-of-the-earth profiles, other Army aircraft, and ground radios. The radio system will provide Army aircraft with the capability for continuous and reliable communications at non-line-of-sight distances.

Program Management Responsibility. The Program Manager, Electronic Combat has responsibility for the AN/ARC-220.

Y2K Status. The Army reported the AN/ARC-220, in its March 31, 1999, status report to OSD, as a mission-critical system, with a Y2K certification date of January 15, 1998. A higher level test for the AN/ARC-220 is not required because the system is not date dependent.

Objectives

The overall audit objective was to evaluate the ability of the AN/ARC-220 Nap-of-the-Earth Aircraft Communication System to operate successfully in the year 2000, including the system's ability to access and transmit information from point of origin to point of termination. Additionally, the audit determined the adequacy of the contingency plan and the accuracy of the status reports. See Appendix A for a discussion of the audit scope and methodology and our review of the AN/ARC-220 system.

Year 2000 Status of the AN/ARC-220 Nap-of-the-Earth Aircraft Communication System

The program manager effectively assessed that the AN/ARC-220 will operate successfully on January 1, 2000. The AN/ARC-220 was appropriately certified, and the contract was modified to include the Y2K compliance clause. The AN/ARC-220 is not date dependent. The program manager prepared a contingency plan that provides reasonable assurance that the AN/ARC-220 will continue to operate after the year 2000. Therefore, the risk that the AN/ARC-220 will fail due to Y2K problems is low.

Certification Process

DoD Requirements. The DoD Management Plan describes the Y2K certification process, which requires that system developers, maintainers, and owners certify and document that each system is Y2K compliant. A sample Y2K compliance checklist is in Appendix G of the DoD Management Plan.

Army Requirements. The Army Y2K Action Plan, Revision 2, June 1998, provides the process to assess the Y2K compliance status of all mission-critical systems. The Army Y2K Action Plan, Appendix F, states that all systems reporting to the U.S. Army Y2K database must complete the compliance certification checklist. The checklist aids system owners to ensure that their systems and devices are tested, documented, and certified as Y2K compliant. Also, the Army uses the DoD standard date format ("YYYYMMDD") of four-digit year, two-digit month, and two-digit day, as much as practical. If a system is Y2K compliant and does not use the four-digit date format, the four-digit format is not required.

AN/ARC-220 Certification. The Joint Interoperability Test Command (JITC) certified the AN/ARC-220 as Y2K compliant on September 23, 1997. The program manager and Program Executive Office, Aviation, certified the AN/ARC-220 as Y2K compliant on January 13, 1998, and January 15, 1998, respectively.

Rockwell Collins, Inc., is the contractor for the AN/ARC-220. The contract was modified October 26, 1998, to include the Y2K compliance clause. According to the program manager, the system is not date dependent; therefore, Y2K is not an issue. Also, the contractor stated that the AN/ARC-220 was Y2K compliant when it was delivered to the Government. However, the program manager wanted additional assurances that the system was Y2K compliant and asked JITC to test the system.

Joint Interoperability Test Command. The JITC is an independent Government test organization that provides test results to support Y2K compliance certification decisions. The JITC tested the AN/ARC-220 and assigned a validation level of 1b, indicating "partial dual year capability (four-and two-digit year)," which means the system is Y2K compliant. The AN/ARC-220, while maintaining a four-digit year internally, allows the entry and display of a two-digit year on the control display unit only. Radio operations are not date dependent and thus are not affected by the display of only a two-digit year. JITC stated that it did not perform external system interface testing, but instead relied on the tests performed by the Army Communications Electronic Command.

Communications Electronic Command. The Communications Electronic Command observed the contractor testing the AN/ARC-220 to the contractual requirements. The AN/ARC-220 interfaces with the DoD-developed Global Positioning System, which is a worldwide, satellite-based, radio navigation system. The AN/ARC-220 can interface with the Global Positioning System directly or via a Military-Standard-1553 data bus to obtain time information (two-digit year). The contractor test results for the integrated interface was successful.

Contingency Planning

DoD Requirements. The DoD Management Plan requires a system contingency plan and an operational contingency plan for all nondevelopmental mission-critical systems. The system contingency plan focuses on the restoration of a Y2K compliant system. The operational contingency plan focuses on how to complete the mission without the support of mission-critical systems. The contingency plans are highly interrelated. The system contingency plan must track to at least one operational contingency plan to ensure that an alternative system or procedure is available if the system experiences a Y2K disruption. System contingency plans were due December 30, 1998, and operational contingency plans were due March 31, 1999.

AN/ARC-220 Contingency Plan. The Army did not have a written contingency plan for the AN/ARC-220 in February 1999. We advised the Army to prepare a contingency plan, primarily because of the DoD requirement that all mission-critical systems should have a contingency plan. The program manager agreed to prepare a contingency plan and we received it on April 7, 1999. The Y2K contingency plan for the AN/ARC-220 provides reasonable assurance for continuity of operations on January 2000.

Summary

The program manager took the necessary precautions to assure that the AN/ARC-220 will operate successfully in the year 2000. The program manager certified the system, included the Y2K clause in the contract, and prepared a contingency plan. Accordingly, the AN/ARC is a low-risk Y2K program.

Appendix A. Audit Process

This report is one in a series being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the Y2K computing challenge. For a list of audit projects addressing the issue, see the Y2K web pages on the IGnet at http://www.ignet.gov/.

Scope

Review of the AN/ARC-220 System. We randomly selected the AN/ARC-220 because it was reported as an Army mission-critical system that was certified on January 15, 1998, according to the January 1999 DoD Y2K database. The Technical Assessment Division for the Office of the Inspector General, DoD, reviewed the test plan and test results for the AN/ARC-220 to determine whether the system had been adequately tested. We reviewed and evaluated the status of the progress of the program manager in resolving its Y2K computing issue for the purpose of assigning a risk to the system's, successful operation in the year 2000. We compared the efforts of the program manager with those efforts described in the DoD Management Plan and the Army Action Plan.

DoD-Wide Corporate-Level Government Performance and Results Act Goals. In response to the Government Performance Results Act, the Department of Defense has established 6 DoD-wide corporate level performance objectives and 14 goals for meeting the objectives. This report pertains to achievement of the following objective and goal.

> **Objective:** Prepare now for an uncertain future. **Goal:** Pursue a focused modernization effort that maintains U.S. qualitative superiority in key war fighting capabilities. **(DoD-3)**

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following functional area objectives and goals.

> **Information Technology Management Functional Area.**
>
> - **Objective:** Become a mission partner. **Goal:** Serve mission information users as customers. **(ITM-1.2)**
> - **Objective:** Provide services that satisfy customer information needs. **Goal:** Modernize and integrate Defense information infrastructure. **(ITM-2.2)**
> - **Objective:** Provide services that satisfy customer information needs. **Goal:** Upgrade technology base. **(ITM-2.3)**

General Accounting Office High-Risk Area. In its identification of risk areas, the General Accounting Office has specifically designated risk in resolution of the Y2K problem as high. This report provides coverage of that problem and of the overall Information Management and Technology high-risk area.

Methodology

Audit Type, Dates, and Standards. We performed this economy and efficiency audit from February through April 1999, in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We did not use computer-processed data for this audit.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD. Further details are available upon request.

Management Control Program. We did not review the management control program related to the overall audit objective because DoD recognized the Y2K issue as a material management control weakness area in the FY 1998 Annual Statement of Assurance.

Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues. General Accounting Office reports can be accessed over the Internet at http://www.gao.gov. Inspector General, DoD, reports can be accessed over the Internet at http://dodig.osd.mil.

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Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Special Committee on the Year 2000 Technology Problem
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform
House Subcommittee on Technology, Committee on Science

Audit Team Members

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